UNIVERSITY OF ALBERTA

THE UNIVERSITY OF BRITISH COLUMBIA

UNIVERSITY OF CALGARY

DALHOUSIE UNIVERSITY

UNIVERSITÉ LAVAL

UNIVERSITY OF MANITOBA

MCGILL UNIVERSITY

MCMASTER UNIVERSITY

UNIVERSITÉ DE MONTRÉAL

UNIVERSITY OF OTTAWA

QUEEN'S UNIVERSITY

UNIVERSITY OF SASKATCHEWAN

UNIVERSITY OF TORONTO

UNIVERSITY OF WATERLOO

WESTERN UNIVERSITY

U15 – Group of Canadian Research Universities

University Profiles

2014

U15

Group of Canadian Research Universities

Regroupement des universités de recherche du Canada

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U15
Group of Canadian Research Universities
Regroupement des universités de recherc du Canada

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U15 Chair's Message

Canada's U15 association of research-intensive universities is the nation's collective voice for university research policy and advocacy.

At heart, our organization is about Canada's social, intellectual, and economic dynamism — because we believe university research is a vital enabler of our nation's competitiveness.

Whether it's informing public policy, advocating for new or enhanced research programs, building partnerships with the private sector and research organizations around the world, or celebrating major breakthroughs at our member institutions, The U15's efforts all centre on the goal of making Canada's university research system as vibrant as possible, in support of Canada.

Owing to the sustained advocacy of The U15 and our member institutions, as well as to the strength of Canada's universities more broadly and to the strong partnerships we have developed with our public funding and policy partners, Canada's system of university research is strong, stable, and yielding results.

From Canada Excellence Research Chairs, to projects supported by the Canada First Research Excellence Fund, and across the nation's full spectrum of research infrastructure, Canada's system of university research and The U15's member institutions are delivering a qualitative edge for our country's economy.

As our member institutions — whose commitment to research is core-to-mission — and our association as a whole move forward with our important agenda, we warmly welcome your support, feedback, and partnership.

Feridum Hamdullahpur
Chair, U15

Executive Director Message

In 2012, 15 of Canada's leading research-intensive universities established a Directorate to help us to speak with one voice, to advance the sound public policy that ensures our country succeeds in this globally competitive environment. We know that investing in science and technology pays dividends for all Canadians. It spurs innovation and fosters the curiosity and creativity that our best and brightest minds direct towards solving society's greatest challenges. We also realize it is important to let Canadians know why these investments matter, and how research-intensive universities successfully deliver these societal dividends.

Since then, we have been advancing our institutions' perspectives on matters of importance and relevance to the research enterprise in Canada. Those matters include ensuring that the infrastructure funding policy reflects our sector's needs, that the federal government understands our fundamental role in the immigration and employment process, and that governments of all levels appreciate our importance in spurring the development of innovative industries. On these issues and more, The U15 is making sure the voice of research-intensive universities is not only heard but acted upon.

Through our activities, and those of our members, Canadian universities have received significantly more funding to pursue globally competitive research excellence.

We hope, as you read, you enjoy the profiles of our member universities, which offer insight into why the majority of all doctoral students, and almost half of all the university students in Canada, choose to attend our institutions and why we are a viable and competitive choice for international students who want to study at world-class institutions.

We look forward to continuing to work together to create an exciting and enriching research enterprise that draws students, researchers and discoverers to our campuses and to our country.

Suzanne Corbeil
Executive Director, U15

U15

Group of Canadian Research Universities

Regroupement des universités de recherche du Canada

1985: Five Ontario research universities begin meeting informally.

1989: The Ontario group expands to include three universities in Quebec and BC.

1991: The group expands again and is labelled the Group of Ten (G10).

2006: The G10 adds Dalhousie, Calgary, and Ottawa to become the G13.

2011: Manitoba and Saskatchewan join and the group is renamed The U15.

2012: The U15 hires its first Executive Director and creates the U15 Directorate.

2014: The U15 joins the Global Network of Research.

The U15, Canada's 15 leading research universities, play a unique role in our society. They generate and mobilize world-changing knowledge. They educate and inspire leaders, *from our Nobel Prize winners to our astronauts and prime ministers*. They attract exceptional researchers, teachers and students, whose stellar accomplishments form the foundation of our nation's research and development capacity.

From quantum computing to oncology, and oceanography to the humanities, the U15's research strengths are as broad as its aims are high. U15 universities foster world-class scholarship that shapes and realizes our national and global public policy goals, informs strong industry partnerships, fosters social, cultural, economic and environmental innovation and advances Canada's international influence and effectiveness.

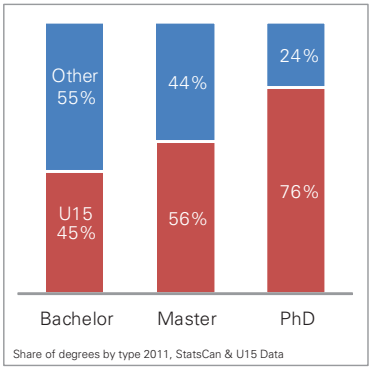
> **"Our task is to inspire the next generation and signal that Canada equals intellectual opportunity. If we succeed, we will be handing Canada a key competitive edge. The U15 will advocate for and to create these conditions at our universities and in our country."**
>
> **Amit Chakma, U15 Inaugural Chair (2012–2014)**

U15 institutions share a global orientation and seek out international partnerships with other top institutions. The organization belongs to the Global Network of Research Intensive Universities and is a signatory to the Hefei Statement on the Ten Characteristics of Contemporary Research Universities.

www.u15.ca

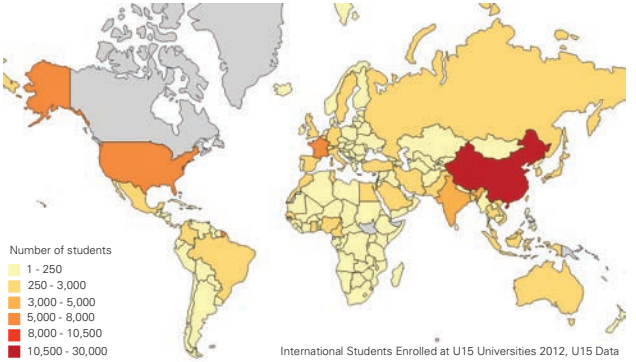
U15 Universities...

Educate Canada's top talent



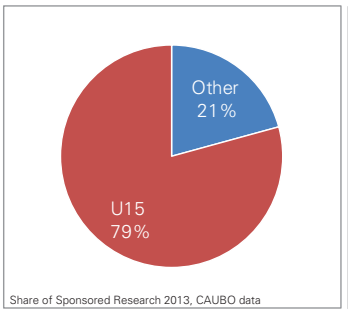
Share of degrees by type 2011, StatsCan & U15 Data

Attract students from around the world



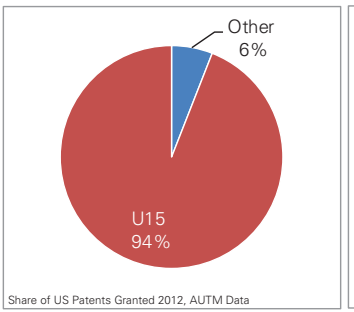
International Students Enrolled at U15 Universities 2012, U15 Data

Attract the most research funding



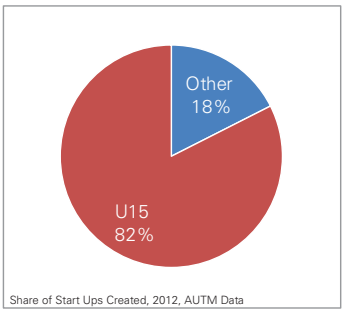
Share of Sponsored Research 2013, CAUBO data

Receive the most patents



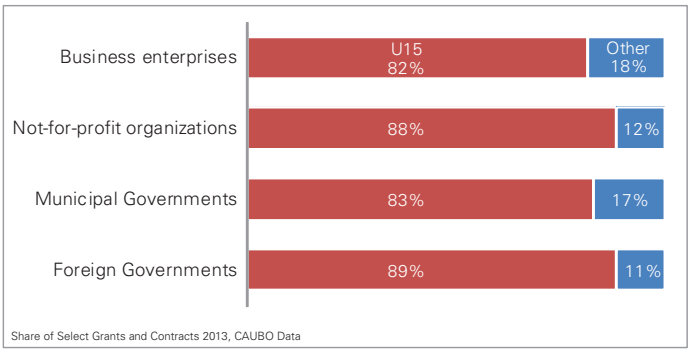
Share of US Patents Granted 2012, AUTM Data

Create the most spin-offs



Share of Start Ups Created, 2012, AUTM Data

Attract the most research investment from a variety of sectors



Share of Select Grants and Contracts 2013, CAUBO Data

Strengthen Canada

- Educate over 550,000 people annually.
- Attract $5.3B in sponsored research.
- Employ over 100,000 people in education, research and other roles.
- Centered in communities where 60% of Canadians live.
- Offer English, French and Bilingual campuses.
- Feature world-class research and educational facilities.

UNIVERSITY OF ALBERTA

Founded in 1908, the University of Alberta is a source of strength for the broader community, in keeping with its societal goal of "uplifting the whole people". U of A places special emphasis on delivering an outstanding student experience, through small class sizes and support programs that aim to inspire faculty and reward teaching excellence. The university also boasts more than 100 research centres and institutes spread across five campuses. For example, the university's new Centennial Centre for Interdisciplinary Science is considered one of the most technically advanced science buildings in the world, and is designed to foster the cross-pollination of ideas among five research groups.

Canada Excellence Research Chairs	3
Canada Research Chairs	90
Research Income	$452 million
Undergraduate Enrolment	31,904
Graduate Enrolment	7,598
International Students	6,003
Total Enrolment	39,459
City/population	Edmonton, AB/817,498

With some of the world's most fossil-rich geology lying in the province, the University of Alberta is a leader in Paleontology, with one of the best collections of dinosaurs in North America.

The University of Alberta's areas of excellence include nano-technology, agri-foods, virology, petroleum engineering, and diabetes research. Recently, U of A researchers were the first to produce the medical isotope *technetium-99m* in a cyclotron.

As part of its emphasis on mobilizing knowledge to have an impact on society, the U of A has spurred the development of 80 spin-off companies through *TEC Edmonton*, a joint venture with the City of Edmonton. In part because of this involvement with the private sector, the university contributes $12.3 billion to Alberta's annual economy.

The university also has a significant international impact, such as the contribution of the team of virologists who are working with scientists in South Africa to develop an inexpensive, heat-resistant vaccine to protect cattle, sheep, and goats from five major infectious diseases. U of A also has important partnerships with universities in Germany, Brazil, China, and India.

Core Research Strengths
Food and Bio-Resources
Humanities and Fine Arts/Social Structures and Systems
Science and Technology
Energy and Environment Health and Wellness

www.ualberta.ca

a place of mind
THE UNIVERSITY OF BRITISH COLUMBIA

The University of British Columbia consistently ranks among the top 40 universities in the world and the top three in Canada. Over its 100-year history, UBC has cultivated an international reputation for excellence in advanced research and learning, offering innovative undergraduate, graduate and professional programs. With two campuses – one in Vancouver and the other in the Okanagan Valley in the provincial Interior – and with nearly 60,000 students and more than 15,000 staff, UBC contributes more than $13 billion to the economy each year.

Canada Excellence Research Chairs	3
Canada Research Chairs	186
Research Income	$520 million
Undergraduate Enrolment	47,732
Graduate Enrolment	10,552
International Students	10,190
Total Enrolment	58,284
City/population	Metro Vancouver, BC/2.3 M

As one of Canada's largest research universities, UBC garners about 8,000 research grants worth more than $500 million each year, and has built strong research capacity in a wide range of fields, with particular strengths in sustainability, physics and health sciences.

For example, in health sciences, UBC HIV/AIDS researchers demonstrated in 2010 that using highly active antiretroviral therapy could reduce HIV/AIDS-related mortality rates by more than 90 per cent. In 2014, UBC opened Canada's largest integrated brain health science, research and treatment centre where more than 500 researchers will tackle brain-related disorders facing millions around the world.

In physics, UBC's Quantum Matter Institute has built an impressive team of internationally renowned scholars and researchers over the past decade and now plays a leading role in the discovery, construction and manipulation of quantum materials.

And in sustainability, UBC transformed its entire Vancouver campus into a living laboratory to encourage exploration of the technological, environmental, economic and societal aspects of sustainability, and has attracted more than $300 million in research funding for sustainability related projects.

Core Research Strengths
Food and Bio-Resources
Humanities and Fine Arts/Social Structures and Systems
Science and Technology
Energy and Environment Health and Wellness

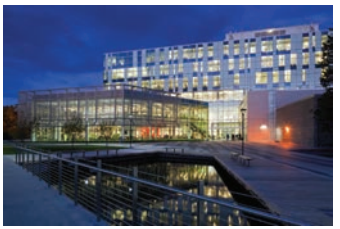
www.ubc.ca

UNIVERSITY OF CALGARY

The University of Calgary is Canada's leading next-generation university, where an integrative approach to teaching and research underpins its academic leadership. The university is ranked 13th among the world's young universities and has a regional economic impact of $7.9 billion.

Canada Research Chairs	73
Research Income	$283 million
Undergraduate Enrolment	25,818
Graduate Enrolment	6,019
International Students	2,941
Total Enrolment	31,802
City/population	Calgary, AB/1,149,552

Calgary focuses on six research themes including energy innovations, space technologies, and mental health. The university is enhancing research in these areas by emphasizing an integrated approach to discovery. Using seven research platforms, including "Analytics and Visualization" and "Knowledge Translation", the university is ensuring the efficient use of facilities, accelerating the commercialization of innovations, and enhancing the exchange of ideas across multidisciplinary teams. Furthermore, the *Taylor Institute for Teaching and Learning*, currently under construction, will take the lead in educational innovation by providing one of the most innovative post-secondary learning spaces in North America.



The Taylor Family Digital Library re-defines what an academic library can be in the 21st Century.

Located in the oil capital of Canada, the University of Calgary has considerable expertise in Chemical and Petroleum Engineering. As leaders in this field, Calgary's researchers are developing transformative technologies, such as carbon-capture and biofuels that the global energy system needs to cut greenhouse gas emissions.

The University of Calgary aims to be a global intellectual hub, with an existing branch campus in Qatar and extensive international partnerships with institutions in countries such as the United States, the United Kingdom, China, Mexico, Germany, Tanzania and Australia.

Core Research Strengths
Brain and mental health
Energy innovations for today and tomorrow
Infections, inflammation and chronic diseases in the changing environment
New Earth-Space technologies
Engineering solutions for health: Biomedical engineering

www.ucalgary.ca

DALHOUSIE UNIVERSITY
Inspiring Minds

As Atlantic Canada's leading research university, Dalhousie attracts more than $142 million in grants and awards annually and emphasizes academic innovation. The university blends world-class academic programs with breakthrough thinking and leading-edge research. Top professors mentor more than 3,500 graduate students and post-doctoral fellows in a multidisciplinary research setting.

Canada Excellence Research Chairs	1
Canada Research Chairs	50
Research Income	$142 million
Undergraduate Enrolment	14,324
Graduate Enrolment	3,395
International Students	2,676
Total Enrolment	18,440
City/population	Halifax, NS/390,328

With four priority research areas, Dalhousie is particularly strong in *Ocean Studies* and is home to two national and international networks: the Ocean Tracking Network, a $168-million international marine conservation project and the Marine Environment Observation and Prediction and Response Network of Centres of Excellence. Another priority research area is *Health and Wellness*, which encompasses a vast array of research at Dalhousie, from leading-edge cancer treatments to high-tech medical devices to improved treatment for mental health concerns and the promotion of healthy life styles. Dalhousie is also a leader in *Advanced Materials and Clean Technology* research, with world-renowned researchers developing products that improve performance, productivity and efficiency while at the same time reducing costs, energy consumption and waste. The university's strength in *Governance, Society and Culture* is demonstrated with four Canada Research Chairs, several University Research Chairs, endowed chairs and many centres and institutes like Dalhousie's new Social Media Lab, the first of its kind in Canada and one of the first social media research labs in North America. Dalhousie's areas of emerging research strength are: Information Science and Communication; Agriculture and Food Technologies; and Energy and the Environment.

The Wave Glider is a floating sensor that tracks marine life and monitors ocean chemistry. This solar-powered aquatic drone's unlimited range allows it to survey marine life in the ocean's depths for months at a time, relaying its findings back to Dalhousie via satellite in real time.

An outward-looking institution, Dalhousie has significant research partnerships and exchanges with institutions in Germany, France, Brazil, China, Israel and Ethiopia.

Core Research Strengths
Oceans Studies
Advanced Materials and Clean Technology
Health and Wellness
Governance, Society and Culture

www.dal.ca

UNIVERSITÉ LAVAL

The second-oldest university in North America, Laval was founded in 1663 and is now home to more than 1,400 faculty teaching in more than 400 programs. The Université Laval is a research force, ranking 88th in the world in terms of research impact, and is an innovation leader with 629 patents, 118 licensing agreements, and 25 spinoff companies.

Canada Excellence Research Chairs	2
Canada Research Chairs	84
Research Income	$303 million
Undergraduate Enrolment	30,980
Graduate Enrolment	10,161
International Students	3,007
Total Enrolment	40,992
City/population	Québec City, QC/516,622

Home to *ArcticNet*, a Network of Centres of Excellence of Canada, Laval's research and development credentials are both broad and deep. The university's expertise in the frontiers of Arctic research is coupled with its innovative work in the area of optics and photonics, as well as a strong health sciences' cluster that leads the way in disease research, ranging from cardiology to obesity and infectiology to neurosciences. Laval is also redefining medical education with its *Centre Apprentiss*, a simulated hospital environment.

The Coast Guard icebreaker Amundsen is the platform for much of Laval's ArcticNet research.

The university's leadership has placed great emphasis on sustainable development initiatives. Laval offers academic programs in sustainability and the university has set itself the goal of becoming a carbon-neutral campus. More than 100 chairs, groups and centers are involved in sustainability related research.

Laval is globally oriented, prioritizing international research collaborations with more than 500 partners in 68 countries, including concentrations in Latin America and Africa. The university's top international partners are located in France and Brazil.

Core Research Strengths
Nordic / Arctic Research
Optics & Photonics
Cardiology / Pneumology / Obesity
Nutrition
Neurobiology / Neurophotonics

www.ulaval.ca

University of Manitoba

Located in Winnipeg, a culturally diverse provincial capital city at the centre of Canada, the University of Manitoba is Manitoba's premier post-secondary research institution, having produced more Rhodes scholars than any other university in Western Canada. Researchers at the University have made many groundbreaking discoveries and continue to lead globally in several research areas such as miniature antenna design and infectious disease.

Canada Excellence Research Chairs	1
Canada Research Chairs	46
Research Income	$136.8 million
Undergraduate Enrolment	25,363
Graduate Enrolment	3,748
International Students	3,869
Total Enrolment	29,759
City/population	Winnipeg, MB/699,346

Manitoba is the only western province with an Arctic sea coast, and this has given the University a unique opportunity to lead research programs in the North. We are cracking the secrets of climate change and its impact on communities in Canada and around the world. The University's current planning framework includes the following research areas: culture and creativity; healthy, safe, secure, sustainable food and bioproducts; human rights; innovations in population and public health; new materials and technologies; and sustainable prairie and northern communities. As part of an update to the University's strategic plan, a process is underway to confirm established and emerging research strengths. The University has incorporated Indigenous achievement into all aspects of its strategic planning and incorporates traditional knowledge into research and innovation.

Smartpark facilitates collaboration among the university and more than 30 research-oriented companies.

The University's engagement with the private sector in commercializing academic research has earned it eight Synergy Awards for Innovation. Building on this success, the University's new Transformational Partnerships approach to research is designed to accelerate the creation of new products and services by connecting research expertise with industry.

The University collaborates internationally with many institutions, including some located in Australia, China, Denmark, India, and Kenya.

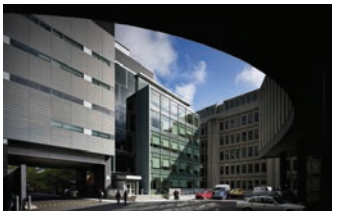
Core Research Strengths
Healthy, Safe, Secure, Sustainable Food and Bioproducts
Sustainable Prairie and Northern Communities
Human Rights
Innovations in Population Health and Public Health
New Materials and Technologies

www.umanitoba.ca

McGill

Located in the heart of a city that brims with creativity and diversity, McGill University is ranked as the 21st best university in the world. The university, which is older than Canada itself, is proud of its long heritage. McGill is where the first blood test for cancer was discovered. It is the home of Canada's first medical school. McGill is where the idea to split the atom came about, and where modern brain surgery was born. Given this track record, it is no surprise that our alumni and faculty include nine Nobel laureates.

Canada Excellence Research Chairs	1
Canada Research Chairs	156
Research Income	$483 million
Undergraduate Enrolment	28,741
Graduate Enrolment	9,411
International Students	7,863
Total Enrolment	38,031
City/population	Montreal, QC/1.65M



McGill's *Life Sciences Complex* continues the university's long tradition of biomedical research. By bringing members of the faculties of Science and Medicine together under one roof, this state-of-the-art environment aims to be an interdisciplinary hub for research ranging from gene interactions to chemical biology, with 200 staff dedicated to cancer research alone.

McGill emphasizes interdisciplinary research initiatives and is focused on strengthening a culture of teaching that fosters innovation. McGill's areas of research excellence build on seven themes, including its longstanding expertise in neuroscience (see below).

McGill is proud to be a Quebec university that is deeply connected to the global community. Half our students come from Quebec *and* we have the largest percentage of international students of any Canadian research-intensive university. Our mission to serve means building partnerships across the street or around the globe, be it a mobile dental clinic to help Montreal's lower-income citizens and the new Quartier de l'Innovation district or collaborations with leading institutions in the United Kingdom, Japan, Brazil, France, and Israel, among others.

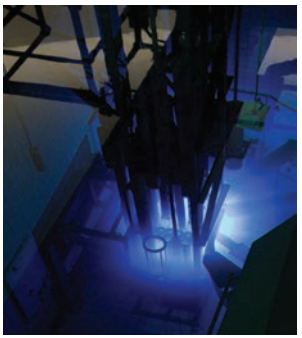
Core Research Strengths
Humanity, identity, and expression
Public policy, organizations, social transformation
Convergence of life sciences, natural sciences, and engineering
Health research and improved delivery of care
Human brain and the entire nervous system
Foundations and applications of technology in the Digital Age
Natural environment, space, and the universe

www.mcgill.ca

McMaster University

Located at the western tip of Lake Ontario, McMaster University is consistently ranked one of the Top 100 universities in the world. It ranks sixth in Canada in terms of research intensity, with a total research income of $325.9 million – averaging $248,600 per faculty member. Its research strengths range across a broad spectrum of inquiry, from automotive research to medicine. McMaster is the only institution in North America to host a United Nations University: the *Institute for Water, Environment and Health* (UNU-INWEH).

Canada Excellence Research Chairs	1
Canada Research Chairs	62
Research Income	$325 million
Undergraduate Enrolment	25,424
Graduate Enrolment	4,344
International Students	2,235
Total Enrolment	29,735
City/population	Hamilton, ON/519,950



The McMaster Nuclear Reactor is one of the world's largest suppliers of the medical radio-isotope Iodine-125, used in the treatment of prostate cancer.

McMaster is committed to brokering the flow of ideas between academia and the broader community. For example, McMaster has an ongoing and growing relationship with the Fraunhofer Institute for Cell Therapy and Immunology of Leipzig. The two institutions are establishing the Biomedical Engineering and Advanced Manufacturing (BEAM) centre in Hamilton to develop innovative technologies to automate cell therapy production.

McMaster champions a unique approach to higher education: the "McMaster Model" of problem-based learning has changed the way professors teach and students learn at universities around the world. This approach makes McMaster a magnet for researchers and students whose focus is not only innovation and discovery, but the ability to communicate new knowledge in ways that change practice.

McMaster participates in student exchanges with more than 70 universities around the globe, and the university has major international collaborations with institutions in countries including Germany, Brazil, Italy, France, United Kingdom, and India.

Core Research Strengths
Materials and Manufacturing
Life, Health and Bio Sciences
Economics and Public Policy
Nuclear and Renewable Energy
Automotive Research

www.mcmaster.ca

Université de Montréal

The Université de Montréal is the best comprehensive French-language university in the world, boasting a range of expertise that is unique in Canada.

With programs in all the major disciplines related to human and animal health, the university is a leading training and research hub. Its network of 37 partner hospitals and health centres is one of the strongest clinical divisions in the country.

Canada Excellence Research Chairs	1
Canada Research Chairs	130
Research Income	$526 million
Undergraduate Enrolment	47,717
Graduate Enrolment	16,746
International Students	7,870
Total Enrolment	64,463
City/population	Montreal, QC/1,959,987

In addition to 16 core faculties, the university has two affiliated schools: Polytechnique Montréal (engineering) and HEC Montréal (management).

The University's research strategy leverages this broad expertise to address the most complex challenges facing today's societies. Supported by an ambitious $500 million fundraising campaign, the *Campus Montréal* initiative seeks to boost the impact of the academic enterprise by engaging the private sector in transformative discoveries. This initiative aims to develop new models for research in every discipline, as well as to drive innovations that will lead to a better, more prosperous society.

As the largest university in Canada's most "European" city, the Université de Montréal has an international outlook, and it is natural for it to join forces with other institutions of higher learning. The University's co-operative agreements with institutions in 65 different countries and partnerships with 550 researchers around the world exemplify this international orientation.

Core Research Strengths
Personalized medicine
Drug development
Neuroscience
Advanced materials and nanotechnology
Operational research and Big Data
Digital humanities
Mathematics and high-performance computing
Sustainable development and environment

www.umontreal.ca

uOttawa

Located in the heart of a G8 capital with ready access to national institutions, the University of Ottawa is the world's largest bilingual university.

Ranked 7th among Canada's most research-intensive universities, total research income per faculty member is $236,800. It has also ranked among the world's top 200 institutions in the *Times Higher Education World University Rankings* since 2011 and is engaged in research collaborations with institutions in France, Germany, and China, among others.

Canada Excellence Research Chairs	1
Canada Research Chairs	73
Research Income	$302 million
Undergraduate Enrolment	35,609
Graduate Enrolment	6,327
International Students	3,383
Total Enrolment	41,905
City/population	Ottawa, ON/870,250

In 2013 *Robert Boyd*, Canada Excellence Research Chair in Quantum Nonlinear Optics, was the first to "observe Schrodinger's Cat" by measuring the quantum states of light. This groundbreaking discovery challenges the Heisenberg uncertainty principle, a fundamental tenet of Physics for the past 80 years.

The University of Ottawa is recognized nationally and internationally for its strength in cardiovascular research, neuroscience, molecular and environmental science and catalysis. It is a powerhouse in photonics and optics research, with eight Canada Research Chairs in this area and a team that includes Dr. Robert Boyd, Canada Excellence Research Chair in Quantum Nonlinear Optics and Dr. Paul Corkum, National Research Council-Canada Research Chair in Attosecond Photonics. The University is close to completing the construction of its Advanced Research Complex (ARC) which will house two leading research efforts: the uOttawa Centre for Advanced Photonics and a cluster of state-of-the-art geoscience laboratories.

The University is also home outstanding scholars in public policy and the largest law school in Canada, renowned for expertise in the fields of information, privacy and technology law; health law; public law; and indigenous and human rights law.

The University of Ottawa is committed to excellence in four strategic areas: student experience, research excellence, international endeavours, and bilingualism. It attracts top researchers and forges links with innovators the world over.

Core Research Strengths
Catalysis and Nanotechnology
Cardiovascular Science and Neuroscience
Photonics
Francophonie
Bijuralism

www.uottawa.ca

Canada Excellence Research Chairs	1
Canada Research Chairs	49
Research Income	$168 million
Undergraduate Enrolment	19,862
Graduate Enrolment	4,186
International Students	1,728
Total Enrolment	24,042
City/population	Kingston, ON/159,561

One of Canada's oldest universities, Queen's is also one of the country's most research-intensive. Fundamental advances in health care, environmental, materials and energy sciences have all emerged from the Queen's campus. The university ranks fourth among medical-doctoral universities in Canada and its 19 research centres are leaders in their fields. The research strategy of the university is expressed in four interdisciplinary themes that cut across faculties. Exploring Human Dimensions seeks to model the dynamics of human health and behaviour. Understanding and Sustaining the Environment and Energy Systems unites the ecology and engineering fields. Creating, Discovering and Innovating emphasizes curiosity as the foundation of all research. Securing Safe and Successful Societies examines methods and outcomes of efforts to secure our human, financial, political, and physical assets.

Students can study at Queen's own 15th-century *Herstmonceux Castle* in England.

Queen's makes sure its research has an impact, through technology transfer via commercialization that has created more than 500 direct jobs and spinoff companies that have attracted more than $1 billion in investments.

As a member of the international Matariki Network, Queen's is committed to strong links between research and undergraduate teaching, a rich learning environment, and social and global responsibility. In addition, the university hosts the Southern African Research Centre, a focal point within Canada for research on international development programs. The university's major international partnerships include agreements with institutions in China, Japan and France.

Core Research Strengths
Astroparticle Physics
Chemistry
Health
Engineering
Policy Studies

www.queensu.ca

University of Saskatchewan

Over more than a century, the University of Saskatchewan has led far-sighted research and innovation, developing, for example, the cobalt-60 cancer therapy technology and more than 400 commercial crop varieties. Nobel chemistry laureate Gerhard Herzberg was a faculty member for a decade. Current research strengths include: agriculture and food security; energy and mineral resources; synchrotron sciences; Aboriginal scholarship and engagement; water security; and "one health" – an integrated approach to human/animal/ecosystem health. The university is a leader in community-engaged scholarship, which connects research, teaching and learning with the needs and interests of local and global communities. With one of the highest populations of Aboriginal students among Canadian post-secondary institutions, the university puts particular emphasis on fostering Aboriginal student success.

Canada Excellence Research Chairs	1 (and 1 pending)
Canada Research Chairs	32
Research Income	$158 million
Undergraduate Enrolment	17,379
Graduate Enrolment	3,115
International Students	2,080
Total Enrolment	20,494
City/population	Saskatoon, SK/248,700

The U of S is home to the *Canadian Light Source*, a global centre of excellence in synchrotron science and its applications for health, materials sciences, medical imaging, and the environment.

The U of S hosts two unique national research facilities – the *Canadian Light Source*, one of the world's leading synchrotron facilities, and *VIDO-InterVac*, a world leader in developing vaccines and technologies to fight infectious diseases in humans and animals. Other nationally important research centres include the Sylvia Fedoruk Canadian Centre for Nuclear Innovation and the state-of-the-art Toxicology Centre, offering one of the world's top five interdisciplinary toxicology graduate programs.

The university works closely with *Innovation Place* research park, one of the most successful university-related science and technology parks in North America, to support the growth and success of the province in the global knowledge economy.

Collaborating through numerous global knowledge networks related to our areas of research strength, the U of S currently has 186 research agreements with institutions in 53 countries around the world.

Core Research Strengths
Global Food and Water Security
Energy and Mineral Resources
Synchrotron Sciences
Aboriginal Scholarship
One Health
Society, Culture, and Governance

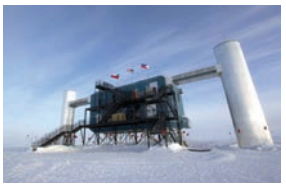
www.usask.ca

UNIVERSITY OF TORONTO

The University of Toronto was established in 1827. Today, the University and its renowned partner hospitals are home to one of the strongest research and teaching clusters in North America. Together they present top undergraduate, graduate, and professional students from over 150 countries with an intellectual environment unmatched in depth and breadth at any other Canadian institution.

Canada Excellence Research Chairs	2
Canada Research Chairs	248
Research Income	$1.19B
Undergraduate Enrolment	65,139
Graduate Enrolment	15,250
International Students	11,308
Total Enrolment	80,389
City/population	Toronto area, ON/5.5 M

The University of Toronto is celebrated as an international leader in advanced research and research-intensive education. U of T ranks second only to Harvard in research publications worldwide, and is third in citations. Fully 45% of the University's publications include international collaborators, and in 2012 U of T faculty partnered with colleagues from 8,000 institutions around the world. U of T is Canada's highest ranked university and is recognized among the top twenty institutions in the world. U of T is also at the heart of one of North America's leading entrepreneurial hubs: Between 2009 and 2012, the University of Toronto community created more startup companies than any other university in North America.



U of T collaborates with 43 institutions from 12 countries at the IceCube Neutrino Observatory in Antarctica.

A blend of academic excellence, close-knit colleges, disciplinary learning communities, and opportunities beyond the classroom including world-class facilities of every description attract more than 80,000 students to three campuses in the Toronto region (St. George, Mississauga and Scarborough). The region itself, the most culturally diverse in the world, offers remarkable opportunities for faculty, staff, and students alike. Over 530,000 alumni – active around the world and in every sphere of human endeavour – are the University's finest ambassadors.

Core Research Strengths

Medicine & Life Sciences
Engineering
Information and Communications Technology
Global Affairs, International Relations & Public Policy
Physical Sciences
Humanities
Arts & Culture
Management

www.utoronto.ca

UNIVERSITY OF WATERLOO

Canada Excellence Research Chairs	2
Canada Research Chairs	62
Research Income	$137 million
Undergraduate Enrolment	29,782
Graduate Enrolment	5,128
International Students	8,308
Total Enrolment	34,910
City/population	Waterloo, ON/98,780

Anchoring Canada's high-tech corridor, the University of Waterloo has earned its reputation as the most innovative university in the country. With the largest engineering faculty in Canada and the largest actuarial science program in North America, Waterloo's emphasis on experiential education, entrepreneurship and transformational research differentiates it from other universities. Waterloo focuses on eight research areas: Discovery and Design of Materials and Systems; Environment and Energy; Health and Well-being; Information and Communication Technology; Manufacturing and Devices; Mathematical Sciences and Computer Science; Society, Culture, and Governance; Quantum Information and Nanotechnology, as part of its quest to be a world leader in fostering a knowledge-based society.

Home to the renowned Institute for Quantum Computing and the Waterloo Institute for Nanotechnology, the University of Waterloo cultivates a culture of innovation and a spirit of discovery. Waterloo's Water Institute is ranked the 10th best in the world, and its ground-breaking research in computing science and healthcare (with the world's first kinesiology department) attracts students and scholars whose ideas spark transformative change. Waterloo has the largest post-secondary co-operative education program of its kind in the world, and its commitment to experiential learning has forged strong partnerships with industry and fosters a distinctive entrepreneurial skill amongst its students.

Faculty member *Chris Hadfield*, commander of the *International Space Station* in 2013.

Waterloo has important partnerships with the U.S., Australia, India, Brazil, Taiwan, Singapore, Germany, France, and China.

Core Research Strengths
Quantum information and nanotechnology
Mathematical sciences and computer science
Environment and energy
Discovery and design of materials and systems
Information and communication technology
Health and Well-being
Manufacturing and Devices
Society, Culture, and Governance

www.uwaterloo.ca

Western
UNIVERSITY · CANADA

With annual research funding nearing $240 million, and a strong international reputation, Western ranks as one of Canada's top research-intensive universities. From fundamental to applied knowledge, Western University discoveries benefit the economic, social, health and cultural development of people in Canada and around the world.

Canada Excellence Research Chairs	1
Canada Research Chairs	66
Research Income	$239 million
Undergraduate Enrolment	25,196
Graduate Enrolment	5,433
International Students	2,448
Total Enrolment	30,611
City/population	London, ON/366,151

Western attracts individuals with a broad worldview, seeking to study, influence and lead in the international community. Western teaches a full complement of disciplines including 15 subjects that are ranked among the top 1% in the world, including Accounting and Finance, Economics and Econometrics, Philosophy and Psychology. It offers more than 400 combinations of majors, minors and specializations at the undergraduate level and 120 graduate and professional programs including business, medicine, law and engineering.

Western's advanced research facilities include the *WindEEE Dome*, the world's first three-dimensional wind dome, and the most advanced wind-research facility in the world.

Western is a leader in transforming concepts into commerce, through its three research parks. These high-tech incubators specialize in large-scale industrial biotechnology and advanced manufacturing.

Over the past five years, Western's commercialization efforts have resulted in 151 patents issued, $24.3 million in commercial income, 18 spin-off companies and five previous spin-off enterprises becoming incorporated.

Between 2007 and 2012, 51% of Western's research publications involved international collaborations. Most of these publications were co-authored with colleagues from the United States, the United Kingdom, China, Germany, Australia and France. Western also has important industrial and institutional partnerships with China, Germany, Brazil, and in East Africa.

Core Research Strengths
Neuroscience/Brain & Mind
Biomedical Imaging
Wind Engineering & Natural Disaster Mitigation
Materials & Biomaterials
Environmental Sustainability & Green Energy
Philosophy of Science
Planetary Science & Exploration
Musculoskeletal health

www.uwo.ca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UNIVERSITÉ LAVAL
UNIVERSITY OF MANITOBA
McGill
McMaster University
Université de Montréal
uOttawa
Queen's UNIVERSITY
UNIVERSITY OF SASKATCHEWAN
UNIVERSITY OF TORONTO
UNIVERSITY OF WATERLOO
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